

CLAIMS:

1. A display device comprising:
a polarizer; and
a light scattering material disposed in a transmission path between said polarizer and a polarized light source, wherein said light scattering material is switchable from a first state to a second state in response to an applied electrical field, wherein said light source includes a plurality of independently controllable colors.
2. The display device as recited in claim 1, wherein said light scattering material comprises a Polymer Dispersed Liquid Crystal (PDLC).
3. The display device as recited in claim 1 further comprising:
a substantially transparent conductive layer disposed between said polarizer and said light scattering material.
4. The display device as recited in claim 3, wherein said substantially transparent conductive layer is disposed on said polarizer.
5. The display device as recited in claim 3, wherein said substantially transparent conductive layer is an Indium-Tin Oxide (ITO) layer.
6. The display device as recited in claim 1, wherein in said first state, said light scattering material is substantially non-scattering, wherein in said second state, said light scattering material is substantially scattering.
7. The display device as recited in claim 1, wherein said light scattering material comprises a nematic curvilinear aligned phase (NCA) polymer dispersed liquid crystal system.
8. A display device comprising:
a first and second polarizer;
a light scattering material disposed between said first and second polarizer; and
a light source having a plurality of colors, wherein portions of said light scattering material are operable for selectable excitation, wherein an excitation of a portion of said light scattering material is operable for controlling an amount of light of a color of said plurality of colors emitted by said display device.
9. The display device as recited in claim 8 further comprises:
a first and second substantially transparent conductive layers disposed between each of said first and second polarizer, wherein said excitation of said portion of said light scattering material layer comprises an electric field applied between a corresponding portion of said first and second substantially transparent conductive layers.

10. The display device as recited in claim 8, wherein said first polarizer forms a substrate, wherein the liquid crystal display device further comprises a driver circuit mounted on said substrate.
11. The display device as recited in claim 8, wherein said second polarizer forms a substrate, wherein the display device further comprises an active element embedded in said substrate.
12. The display device as recited in claim 11 wherein said active device is a varistor.
13. The display device as recited in claim 8, wherein said light scattering material comprises polymer dispersed liquid crystal.
14. A method for manufacturing a display device comprising the steps of:
providing a first and a second polarizer, wherein each of said first and second polarizer comprises a first and a second layer;
coating said second layer of said first polarizer with conductive material; and
depositing a light scattering material layer between said first and second polarizer.
15. The method as recited in claim 14 further comprising the steps of:
making holes through said second polarizer; and
forming a driver and electrodes on said second layer of said second polarizer.
16. The method as recited in claims 14, 15, wherein said second polarizer comprises a third layer, wherein the method further comprises the step of:
printing an active element on said third layer of said second polarizer.
17. The method as recited in claims 14, 15, 16 further comprising the steps of:
coating said first layer of said second polarizer with conductive material; and
etching a cell pattern on said first layer of said second polarizer.
18. The method as recited in claims 14, 15, 16, 17 further comprising the steps of:
printing a crossover insulation pattern on said first layer of said second polarizer; and
printing a crossover electrode pattern on said first layer of said second polarizer.
19. The method as recited in claim 14, wherein said light scattering material comprises polymer dispersed liquid crystal.
20. A display device comprising:
a polarizer; and
a light scattering material disposed on a surface of said polarizer.

21. The display device of claim 20 wherein said light scattering material is positioned to receive polarized light.
22. The display device of claim 21 further comprising a light source including a plurality of independently controllable colors, said light source operable to source said polarized light.
23. The display device of claim 21 further comprising a second polarizer positioned between said light scattering material and a light source having a plurality of independently controllable colors.
24. A method of displaying an image frame comprising:
- (a) addressing a sub-frame segment; and
 - (b) flashing a light source, wherein said light source comprises a plurality of independently controlled portions, and wherein said sub-frame comprises a one or more of said sub-frame segments, said independently controlled portions corresponding to said sub-frame segments, and wherein said image frame comprises a composite of a plurality of sub-frames.
25. The method of claim 24 further comprising:
- (c) repeating steps (a) and (b) for each segment of said sub-frame.
26. The method of claim 25 further comprising repeating step (c) for each sub-frame of said composite.
27. The method of claim 24, 25, 26 wherein said each of said independently controlled segments comprise a first color for a first sub-frame of said image frame and a second color for a second sub-frame of said composite.
28. The method of claim 24 wherein said segment comprises a full sub-frame.
29. A method for modifying an existing liquid crystal display device that includes a top and bottom substrate assembly, wherein said top substrate assembly includes a polarizer, substrate, conductive layer, and said bottom substrate assembly includes a plurality of transistors, comprising the steps of:
- removing the top substrate assembly;
 - removing up to two-thirds of the transistors from the bottom substrate assembly;
 - disposing a light scattering material upon interior surface of the bottom substrate assembly;
 - installing top substrate assembly polarizer, substrate, and conductive layer upon bottom substrate assembly.
30. The method as recited in claim 29 wherein the bottom substrate assembly includes a rubbing layer, the method further comprising the step of:
- removing the rubbing layer from the bottom substrate assembly.